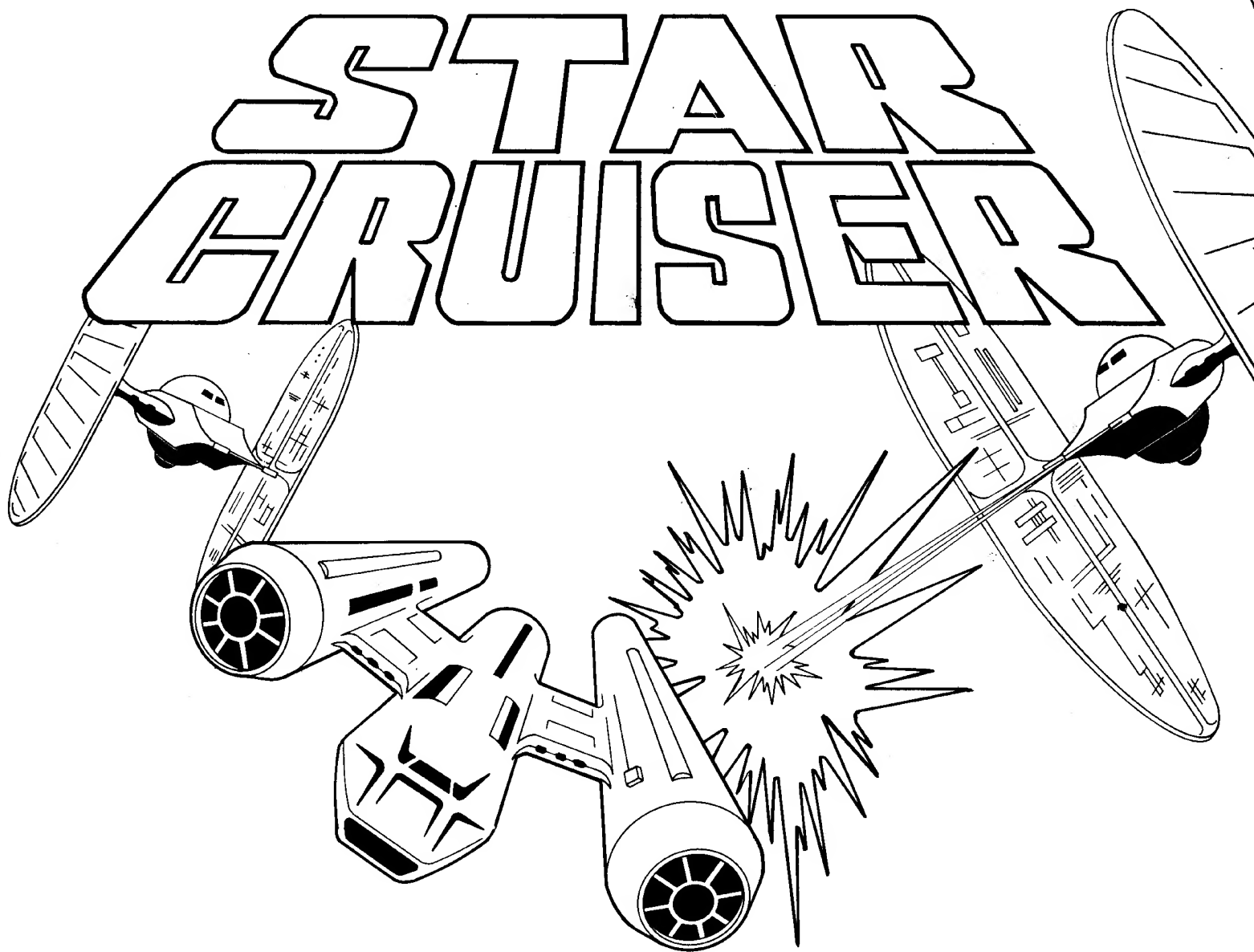


STAR CRUISER



OPERATOR'S MANUAL

SALES AND
SERVICE
(800) 538-1733

ramtek
Our Experience Shows

292 COMMERCIAL ST.
SUNNYVALE, CA 94686

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1. INTRODUCTION

Star Cruiser is another Ramtek Amusement Device which is engineered to provide the highest degree of reliability using the most advanced techniques available. All solid-state circuitry ensures years of dependable service.

Star Cruiser is a two-player driving/shooting game where players use heavy cast aluminum steering wheels and aluminum pedals to control starships. The object of the game is to avoid being hit by your opponent's torpedoes and phasers while you try to hit his star cruiser.

Exciting firing and explosion sounds accompany the sound of the vehicles to provide a dynamic audio presentation.

2. GAME OPERATION

While the Star Cruiser game is not coined, it displays an attract mode which consists of two star cruisers moving across the screen.

An actual game begins when players insert one or two coins (operator adjustable to work on one or two coins per play).

The star cruisers are now positioned at the upper left and lower right corners of the screen. Turning the steering wheel to the left rotates the star cruiser to the left, and to the right rotates the star cruiser to the right.

Actuating the foot pedal causes the ship to move forward accompanied by a "whooshing" sound. The ships can exit the screen only to reappear on the opposite side. The players can fire at their opponent by depressing a switch on the right-hand side of the steering wheel. As long as the switch is depressed, the phaser continues in motion, wrapping around the screen and re-entering on the other side. Releasing the switch causes the phaser to explode. A switch on the left side of the steering wheels actuates the steerable torpedo. The torpedo is steered by turning the steering wheel. When a torpedo is in motion, the steering wheel does not actuate the star cruiser. Only one torpedo or phaser may be in motion for each player at one time. A hit on an opponent's ship scores one point. The score for each player is displayed on the upper portion of the screen. The score does not appear when a torpedo or phaser is in motion. The game is over when one player reaches a score of seven (7) or the set time is exceeded (operator adjustable for 60, 90, 120 or 150 seconds). A light indicates the game is over. The score is displayed then the game goes back into the attract mode.

3. INSTALLATION

Any shipping container that appears damaged should be unpacked with the Carrier Agent present. Carefully inspect the unit for

external damage, then remove the back cover and inspect for internal damage. If any damage is found, notify the Carrier and Ramtek Corporation immediately. Retain containers for Carrier inspection.

Plug in the unit and operate to ensure proper operation.

4. OPERATOR SELECTABLE OPTIONS

The characteristics of the game which can be altered by the operator are:

1. The maximum length of time allowed to play each game.
2. The number of coins per game.

A component top view of the microprocessor board used on Star Cruiser is shown in Figure 3 and the option settings are clearly indicated.

5. WIRING DIAGRAM DESCRIPTION

The wiring diagram in Figure 6 basically describes the major components of Star Cruiser. The functional description of each block is as follows:

COIN DOOR

Coin drop provides a logic signal to the logic board to initiate the game when a coin drop is sensed through the switch closer. A tilt switch is provided to reset the game if the unit is abused.

POWER SUPPLY ASSEMBLY

The power supply assembly generates all the regulated DC voltages required for the logic/sound board.

CONTROL PANEL ASSEMBLY

The control panel assembly provides a logic signal indicating the steering wheel position. It also provides a signal to the logic board when phasers or torpedoes are fired. See Figure 2 for more detail.

FOOT PEDAL ASSEMBLY

Provides a signal to cause the star cruiser to move forward.

LOGIC/SOUND BOARD

The logic/sound board contains the necessary logic circuitry to enable Star Cruiser operation. Its heart is an 8080 microprocessor. The logic/sound board receives input signals from the steering wheel/foot pedal controls and the coin door. It provides output signals to the T. V. monitor to generate the video display.

MONITOR

The monitor provides the video display of the signal from the logic board. See Figure 7 for schematic.

SPEAKER

Provides the sound.

PANEL LAMPS

Provides general glass illumination and indication when game is over.

INTERLOCK SWITCH

Disconnects AC power when the back door is removed.

COIN COUNTER

Counts the coins put in the game.

6. TROUBLE SHOOTING TECHNIQUES

The following diagrams are provided to assist in trouble shooting the unit:

Figure 1	Rear View of Cabinet
Figure 2	Steering Wheel Control Panel
Figure 3	Logic/Sound Board
Figure 4	Power Supply Front View
Figure 5	Power Supply Rear View
Figure 6	Wiring Diagram
Figure 7	T. V. Monitor Schematic

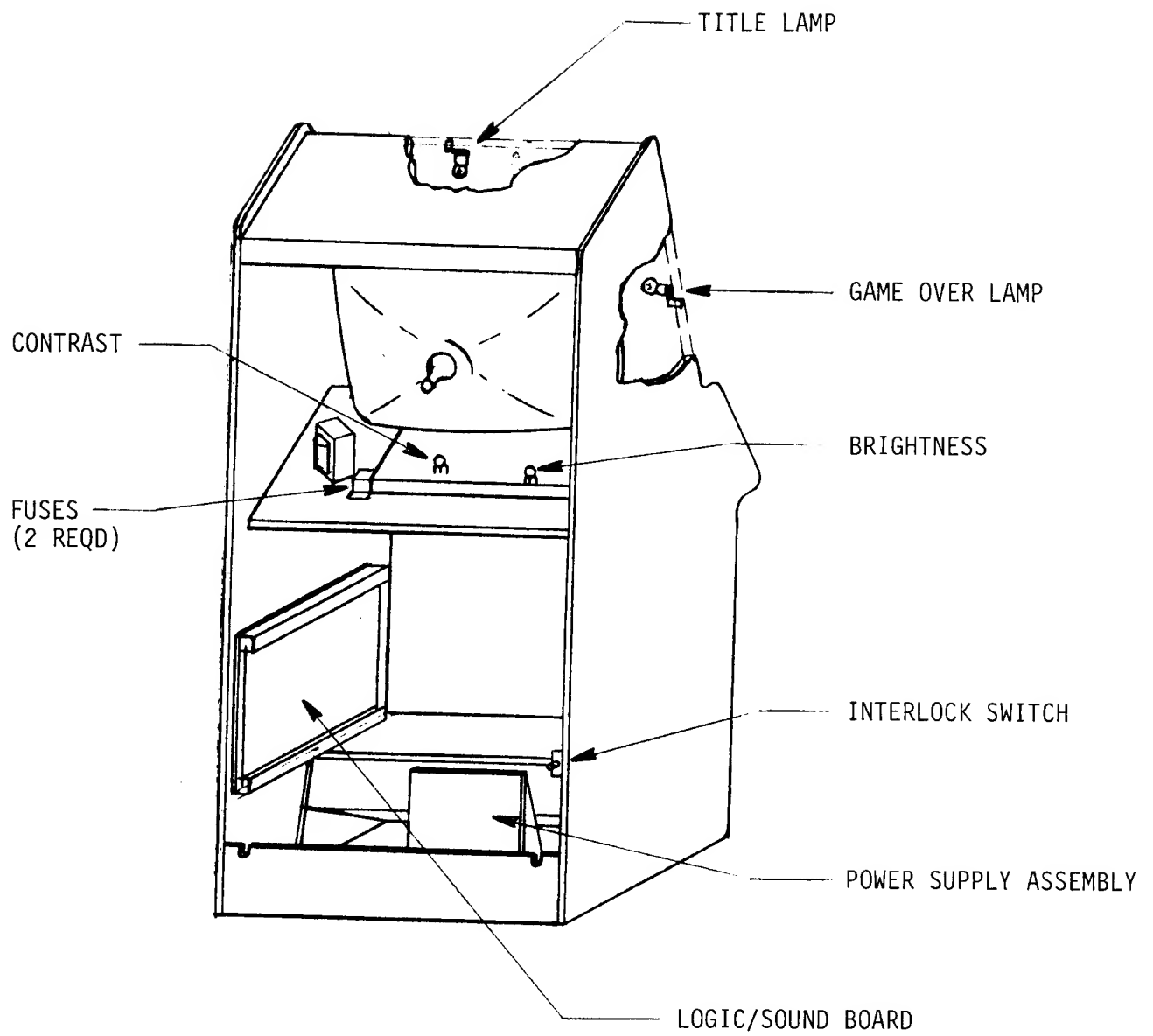
Make sure the power cord is plugged in the wall socket, and the interlock switch is ON. The interlock switch is ON when it is fully depressed -- this requires the back cover to maintain closure; or when the switch is pulled fully out -- maintains self in this position.

Check all three(3) fuses in the game -- the system power fuse located on the rear of power supply assembly and two(2) fuses mounted on the T. V. monitor. See Figures 1 and 5.

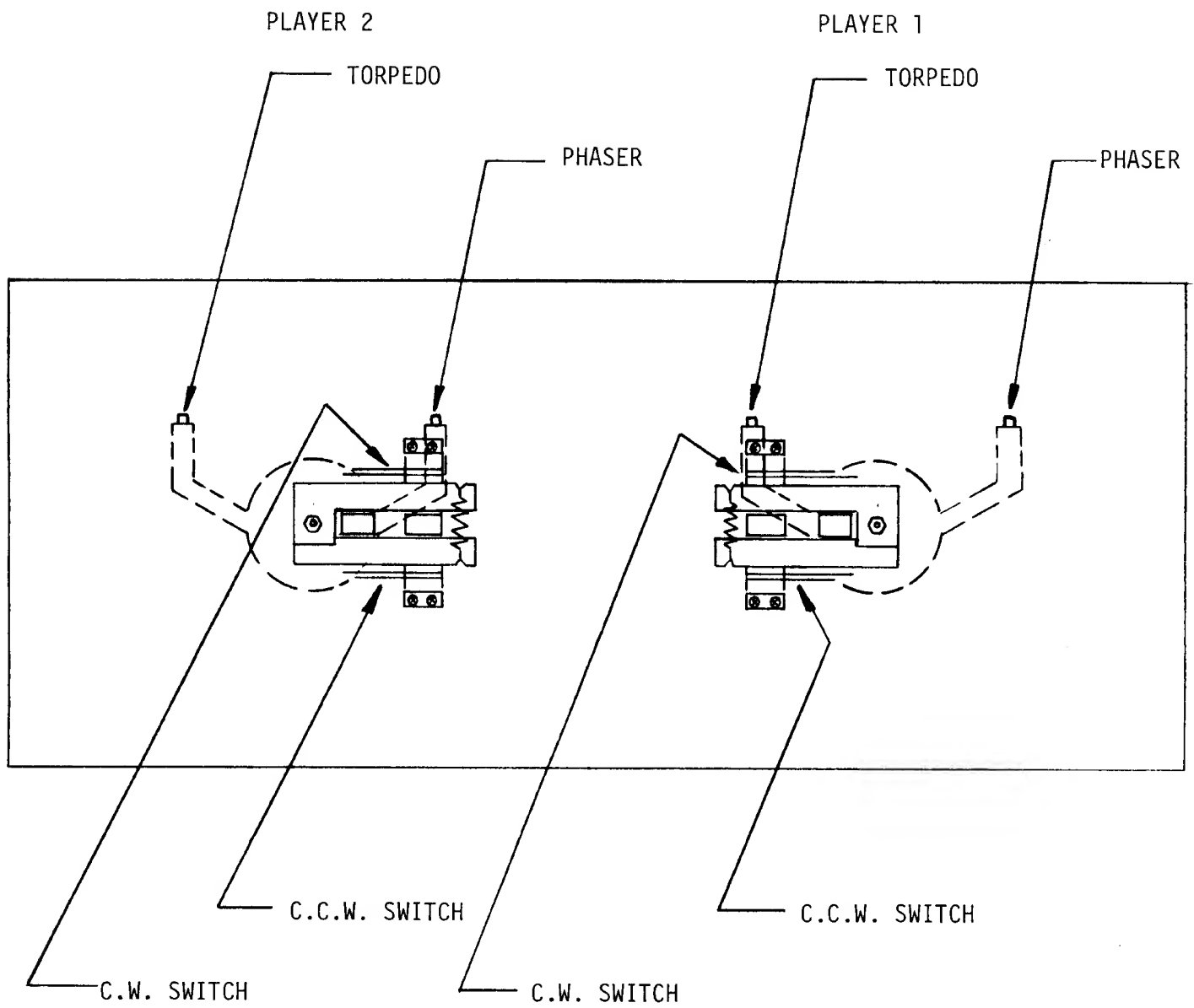
Check the brightness and contrast control on the monitor, and turn them in the direction to give maximum brightness and contrast. Turn brightness and contrast up. Check to see that screen lights up indicating the monitor is working properly.

If there is no sound associated with the game, check the volume control located on the logic/sound board. See Figure 3. Check the +24V DC on the power supply. See Figure 4.

Whenever the game malfunctions, the +5V, -5V and +12V DC supplies should be checked. Use any standard voltmeter. These DC voltages can be measured as shown in Figure 4. Be careful not to short these supplies when making measurement.



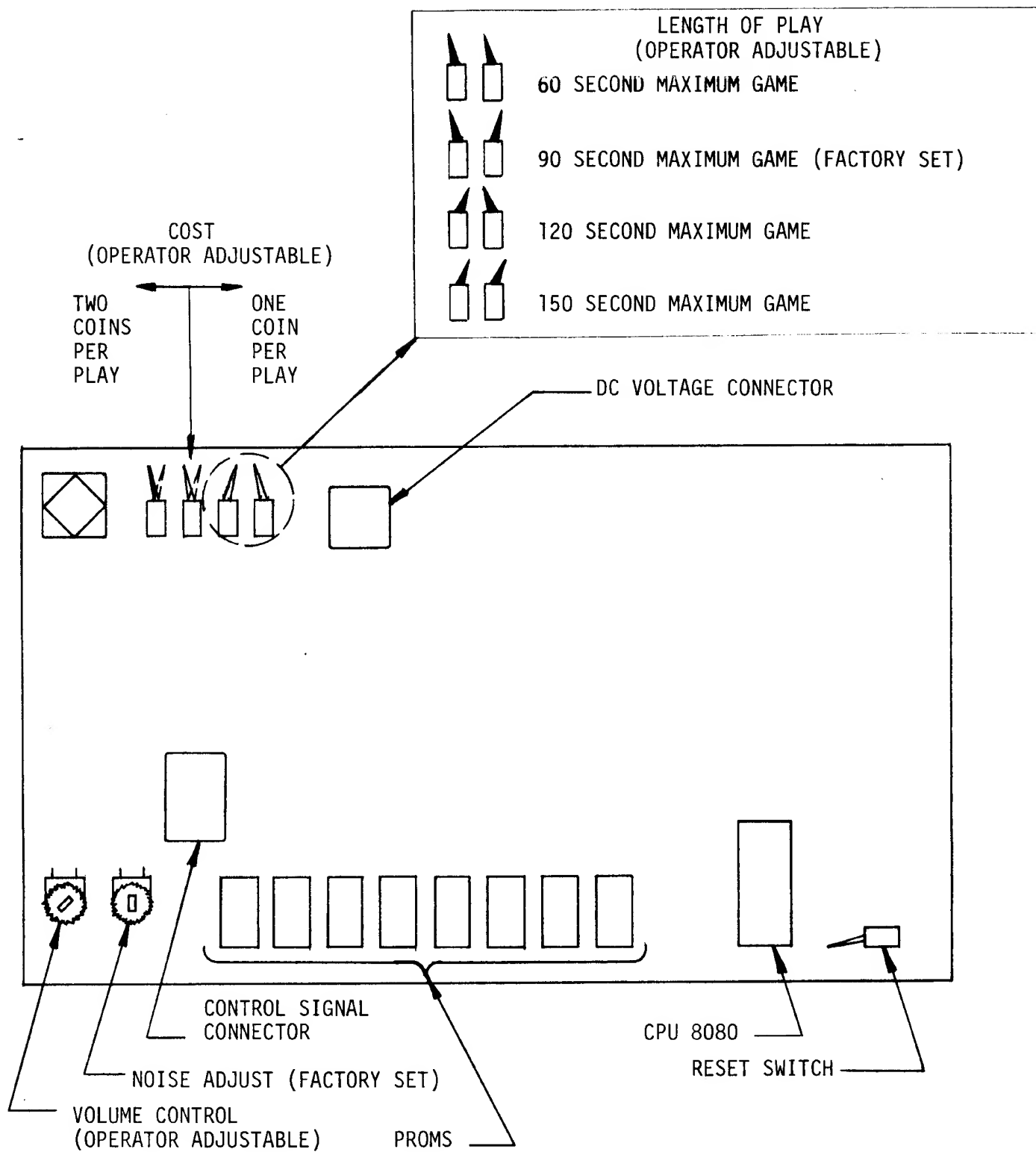
REAR VIEW OF CABINET
FIGURE 1



CONTROL PANEL ASSEMBLY

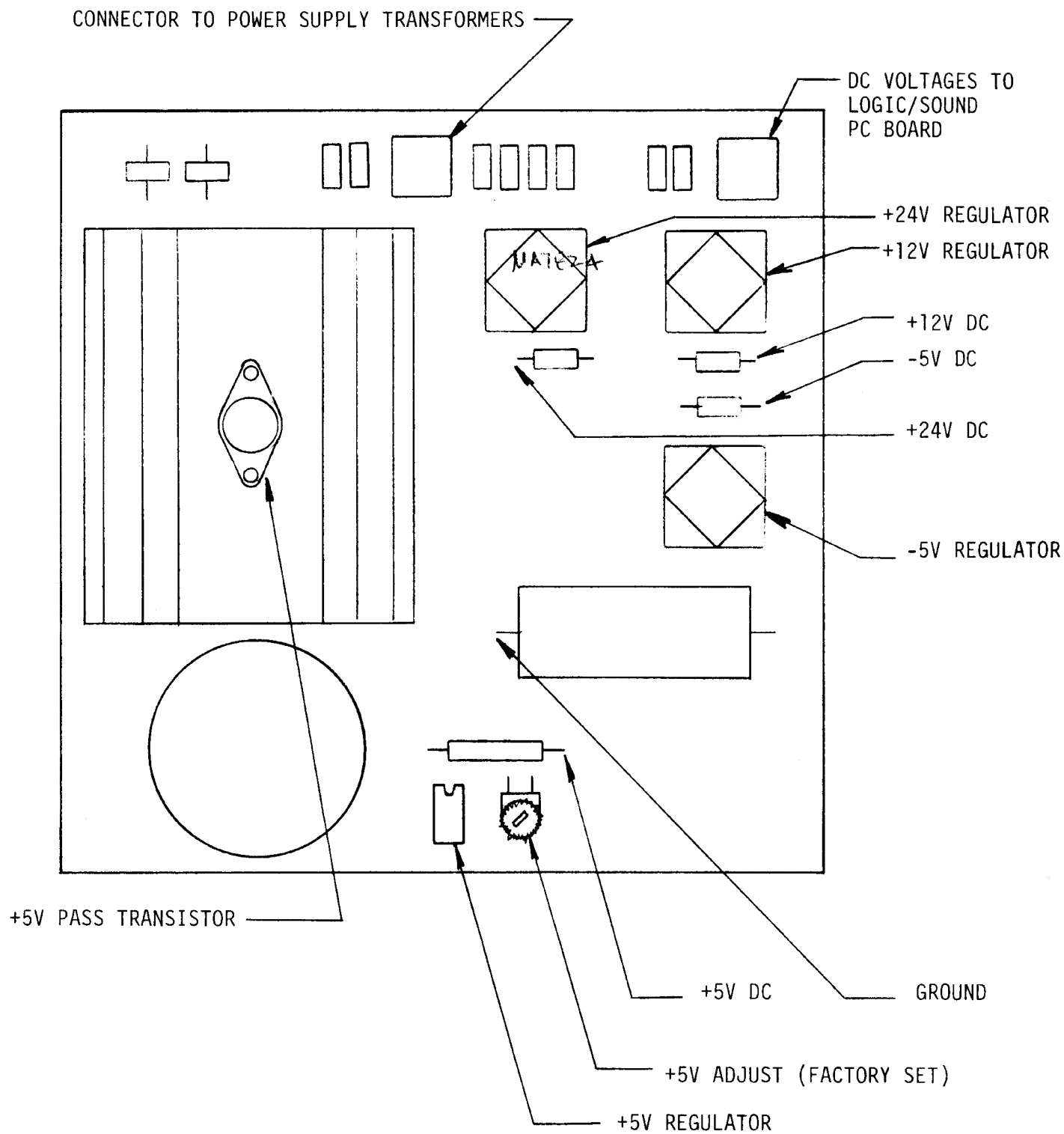
REAR VIEW

FIGURE 2

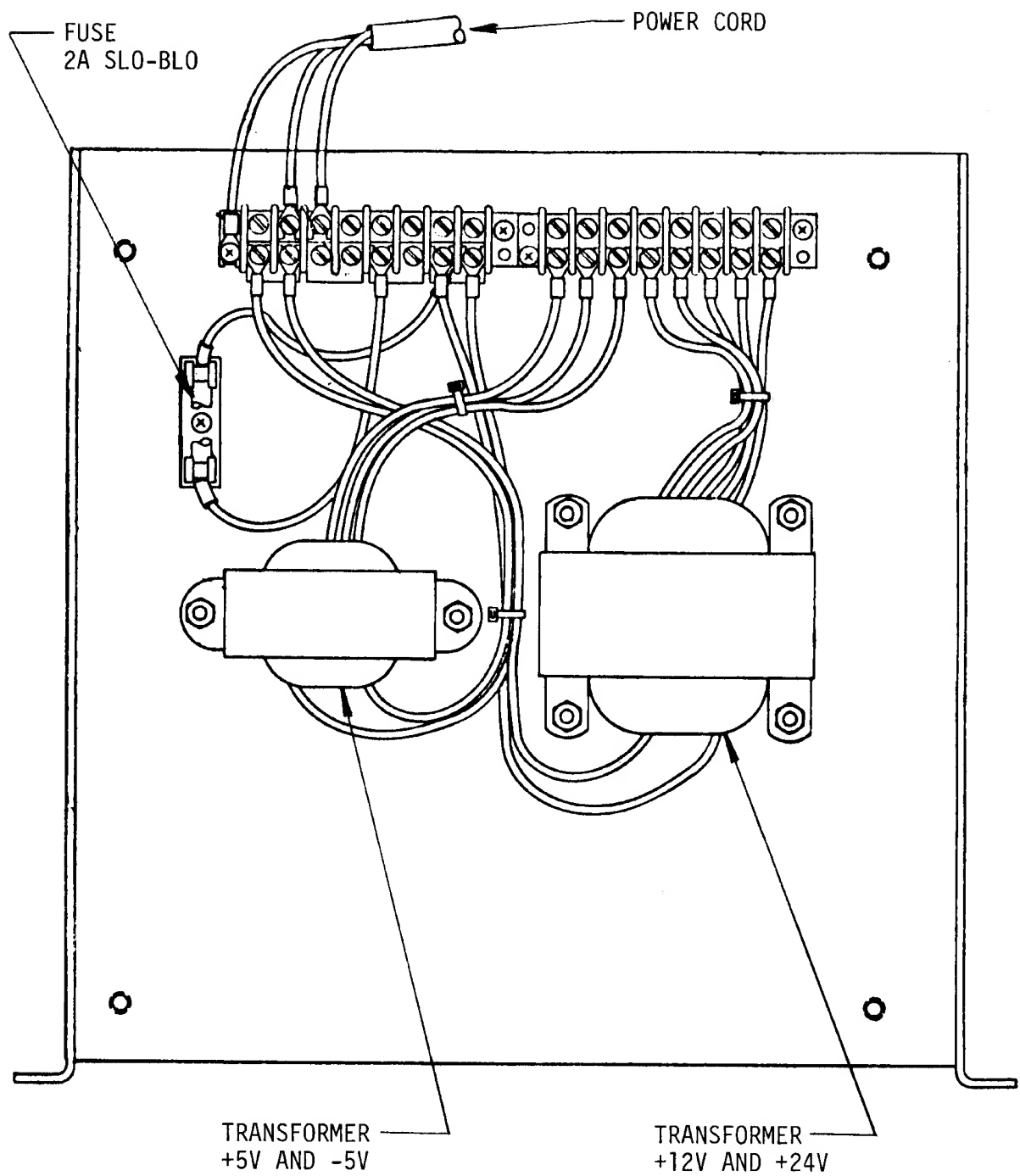


LOGIC/SOUND BOARD

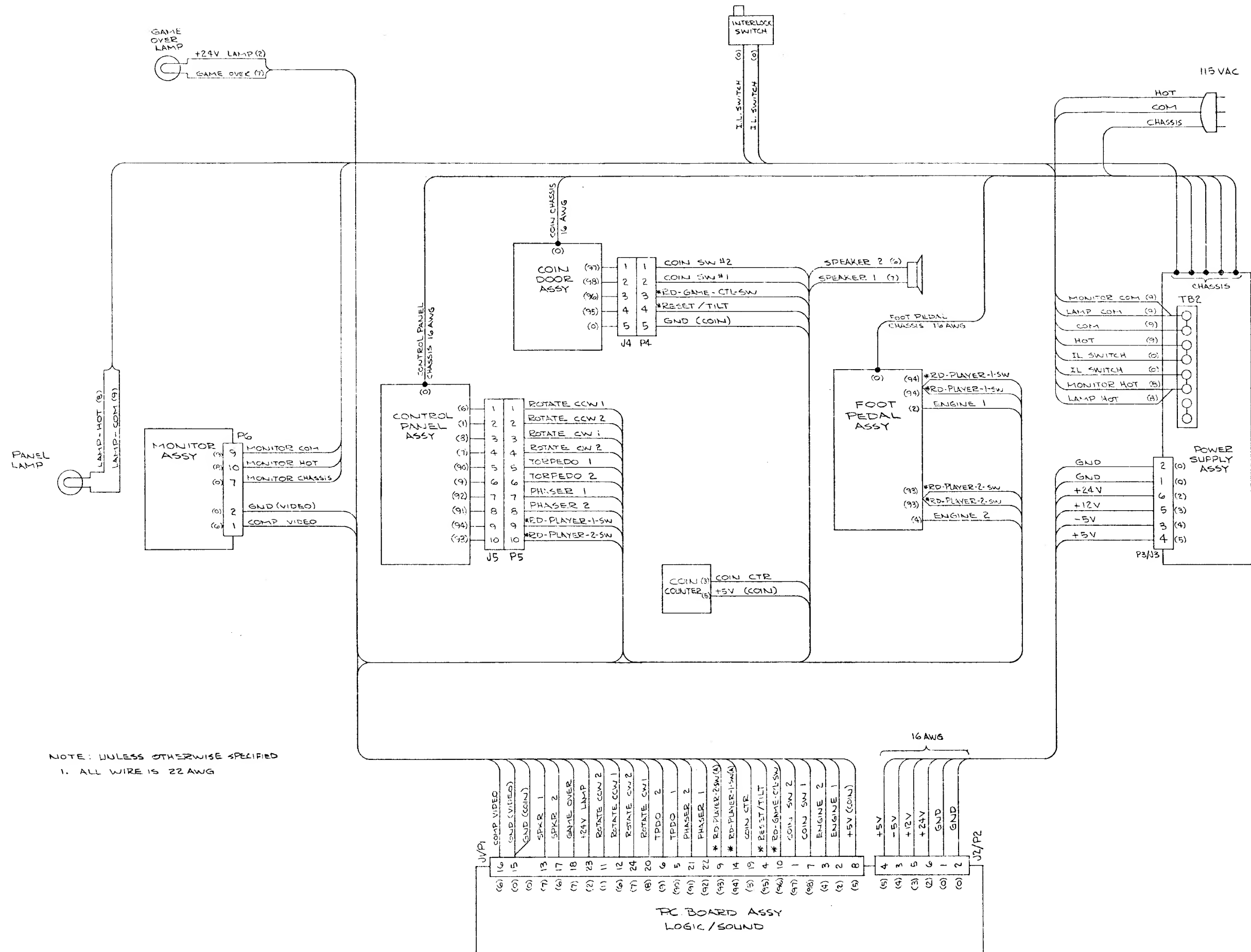
FIGURE 3



P.C.B. ASSY. POWER SUPPLY
FRONT VIEW
FIGURE 4



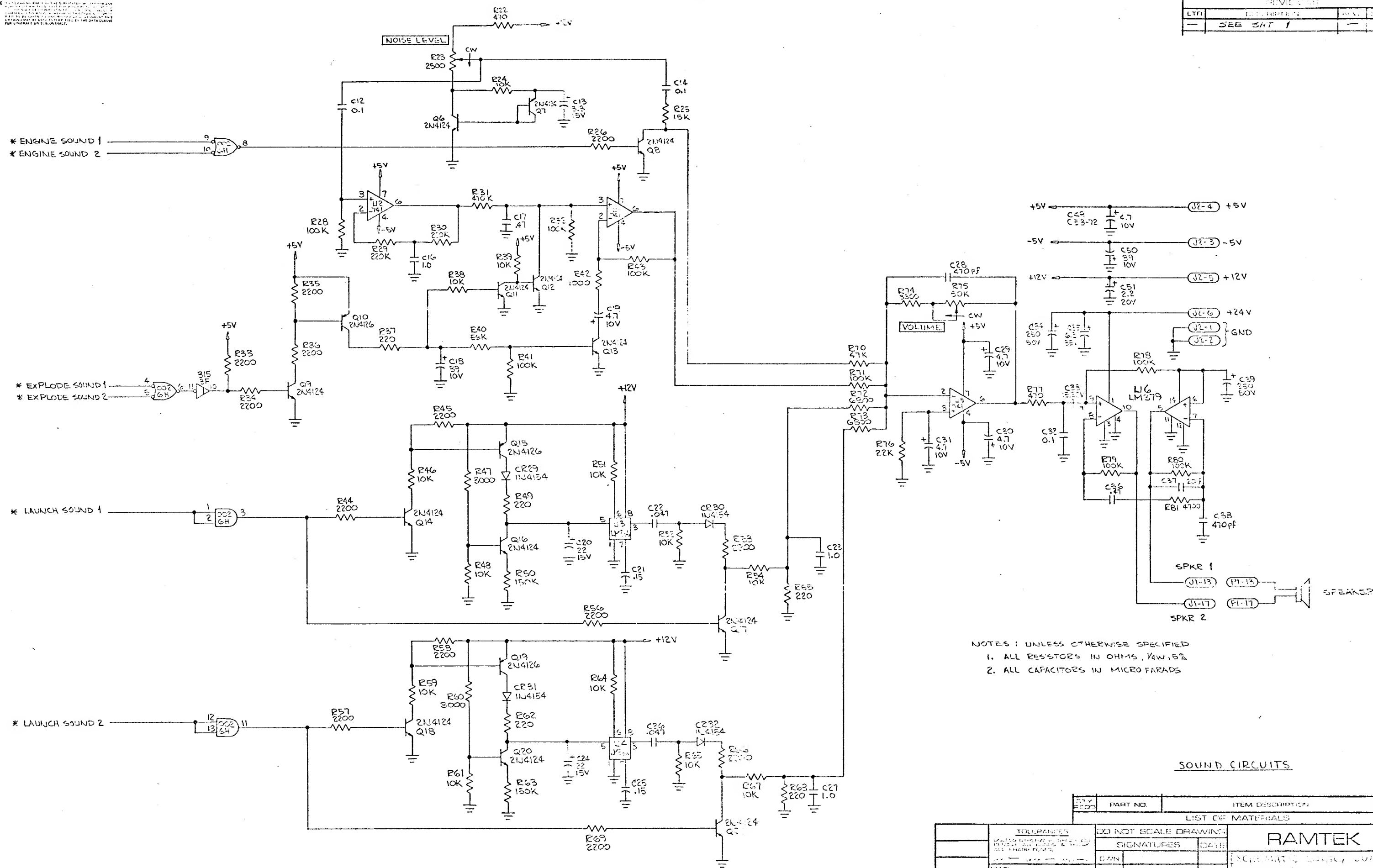
POWER SUPPLY ASSEMBLY
REAR VIEW
FIGURE 5



WIRING DIAGRAM
FIGURE 6

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REVISIONS			
LTR	DESCRIPTION	DATE	BY
1	SEE SAT 1		

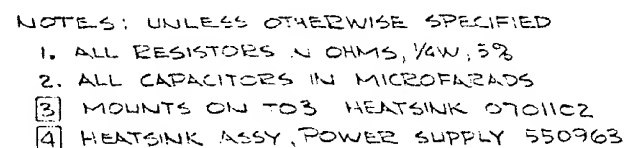


- NOTES: UNLESS OTHERWISE SPECIFIED
 1. ALL RESISTORS IN OHMS, $\frac{1}{4}$ W, 5%
 2. ALL CAPACITORS IN MICROFARADS

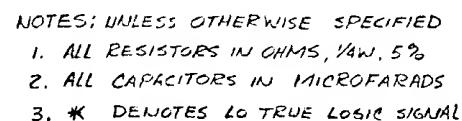
SOUND CIRCUITS

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TOLERANCES		DO NOT SCALE DRAWING		
UNLESS OTHERWISE SPECIFIED		SIGNATURES		DATE
RESISTORS		DESIGN		
CAPS		CHK		
WATL		ENG		
FINISH		APPRO		
NEXT ASSY		RAMTEK		
		SOUND CIRCUIT BOARD		
		REV 1		10/1/84

REVISIONS			
LTR	DESCRIPTION	AMOUNT	DATE
A	RELEASED PER ECO + CIO	1000	10/1/77



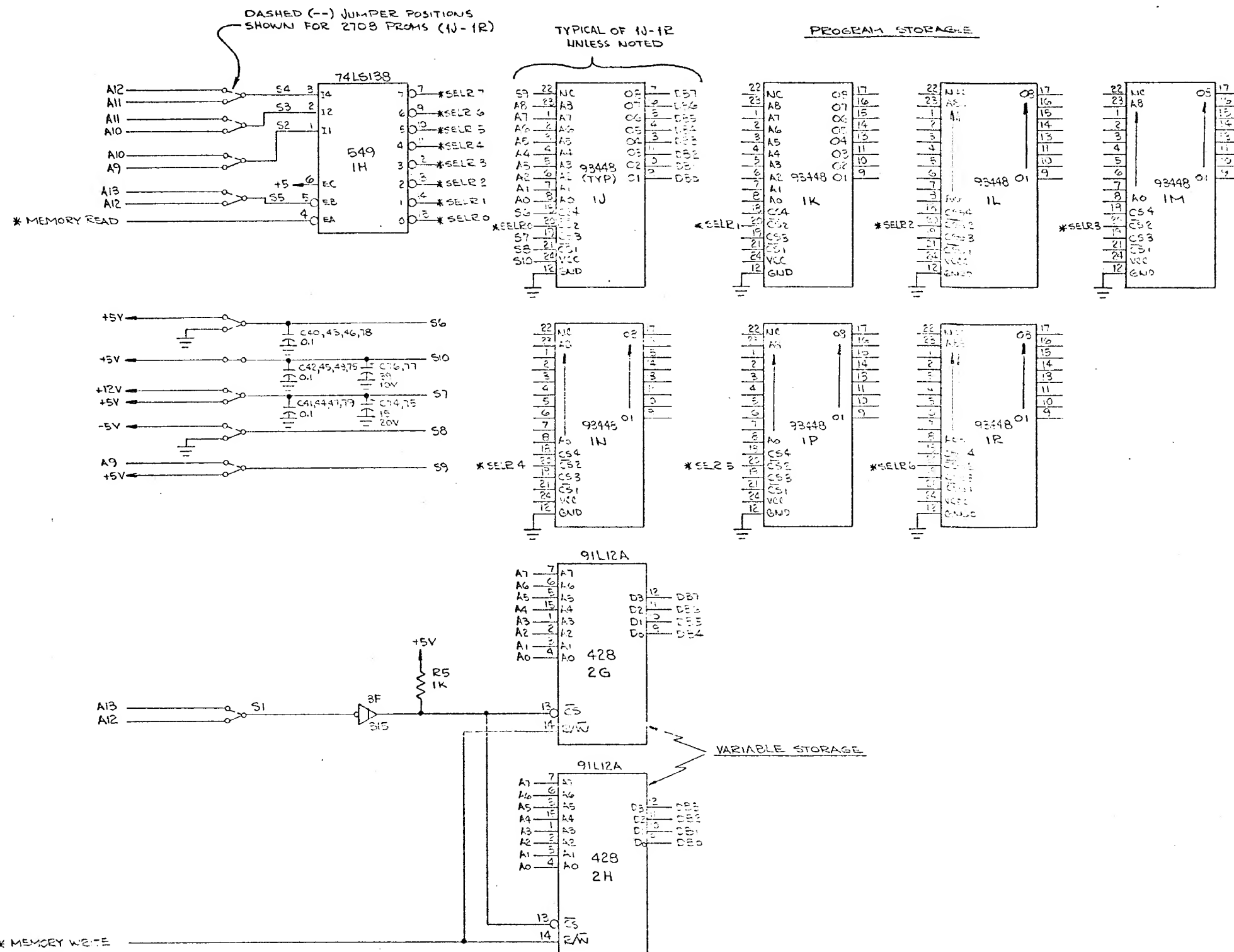
GTY REQD		PART NO.		ITEM DESCRIPTION		ITEM NO.	
LIST OF MATERIALS							
TOLERANCES		DO NOT SCALE DRAWING		RAMTEK			
SPECIFIC TOLERANCES SHALL BE FOR HOLE SIZE & HOLE FINISH & SQUARE ALL OTHER EDGES.		SIGNATURE		DATE		SCHEMATIC DRAWER	
MATERIAL		OWNER		DATE		POWER SUPPLY ASSEMBLY	
FINISH		ENGINEER		DATE		REV	
NEXT ASSY		APPROVED		DATE		REV	



MICRO-PROCESSOR

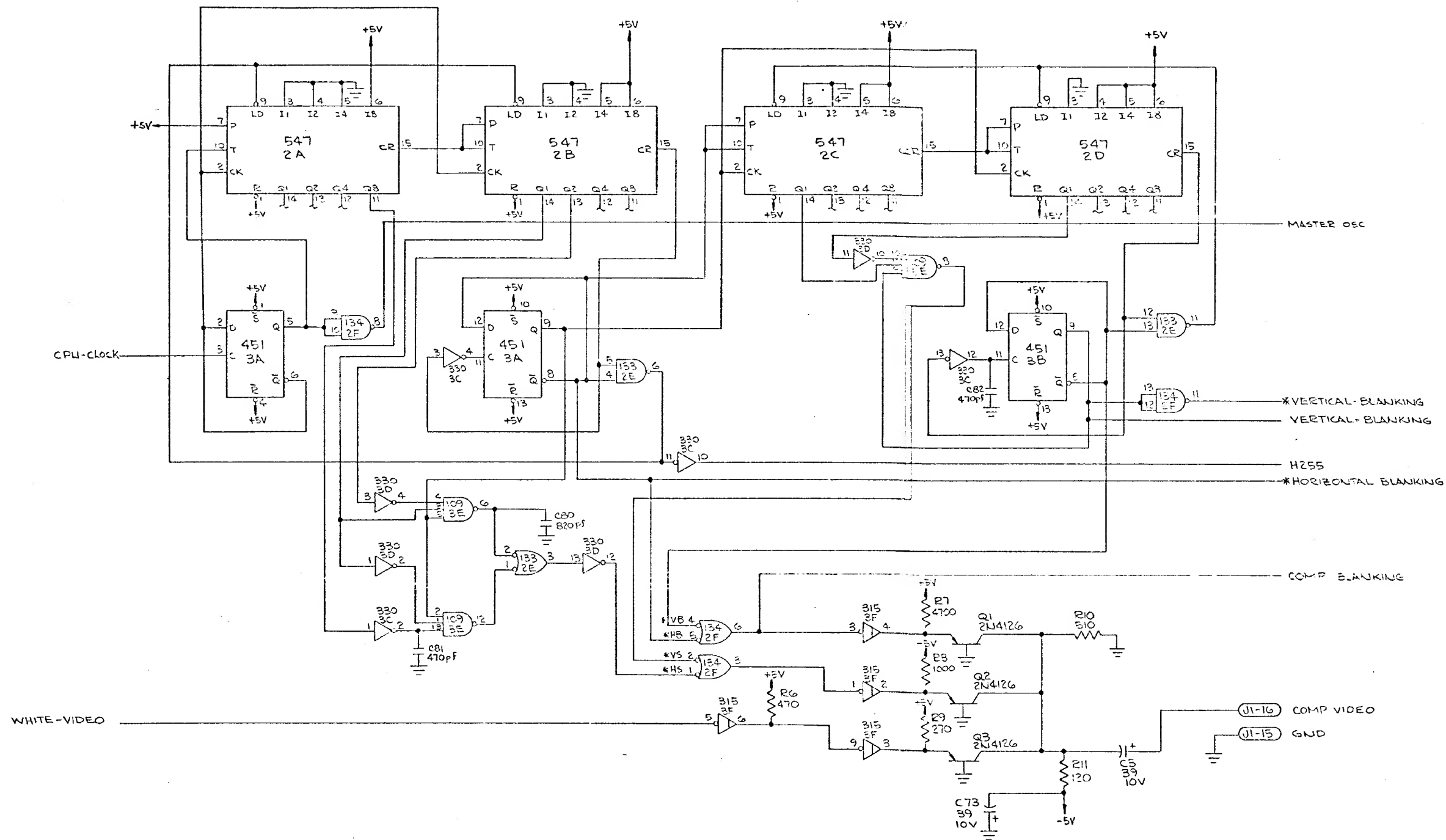
QTY REQD		PART NO.		ITEM DESCRIPTION		ITEM NO.	
LIST OF MATERIALS							
TOLERANCES UNLESS OTHERWISE SPECIFIED REFLECT ALL DIMENSIONS & BREAK ALL CHAMFER EDGES.		DO NOT SCALE DRAWING		RAMTEK			
		SIGNATURES		DATE		MICHAEL C. LOCK/SOUND DATE: 10-1-82	
.XX .XXX .XXX .XXX .XXX .XXX		DATE		DATE		DATE: 10-1-82	
MATERIAL		CHK		CHK		DATE: 10-1-82	
		ENG		ENG		DATE: 10-1-82	
FINISH		APPROV		APPROV		DATE: 10-1-82	
NEXT ASSY						DATE: 10-1-82	

REVISIONS			
LT#	DESCRIPTION	APPROV	DATE
-	SEE SHT 1	-	-



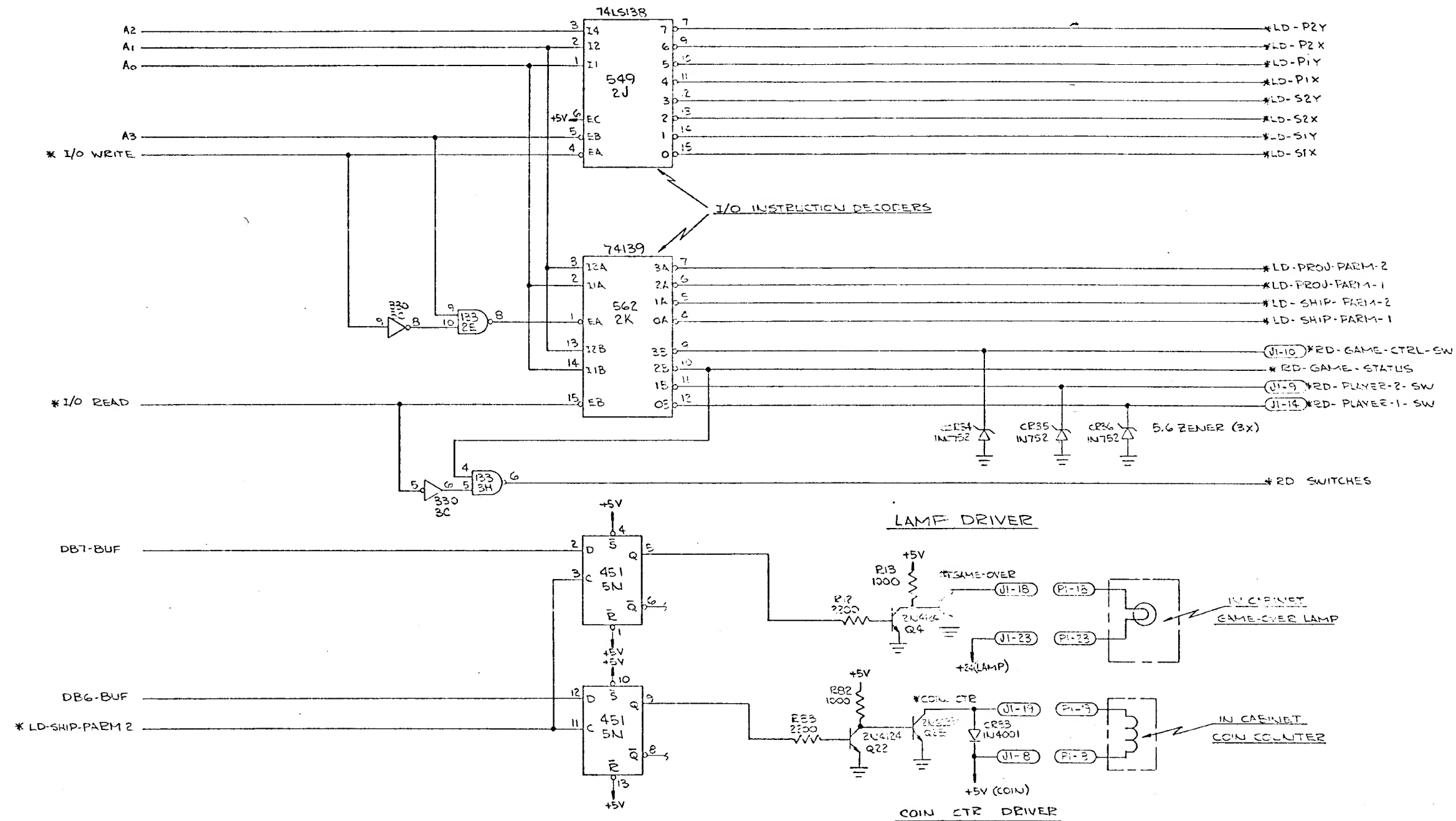
MICRO-PROCESSOR-STORAGE

QTY REQD	PART NO	ITEM DESCRIPTION	ITEM NO.
LIST OF MATERIALS			
TOLERANCES		DO NOT SCALE DRAWING	
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES AND DECIMALS THEREOF.		SIGNATURES	DATE
MATERIAL		DATE	DATE
FINISH		DATE	DATE
NEXT ASSY		DATE	DATE
RAMTEK		REVISIONS	
501003 RLV: N/C		501003 RLV: N/C	
REV. 1		REV. 1	



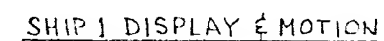
SYNC-GENERATOR

QTY REQD	PART NO.	ITEM DESCRIPTION	ITEM NO.
LIST OF MATERIALS			
RAMTEK			
SHEET 2 OF 2			
REV. 1			
DATE: 10/1/74			
BY: [Signature]			
CHK: [Signature]			
ENG: [Signature]			
APPROX: [Signature]			
NEXT ASSY: [Signature]			

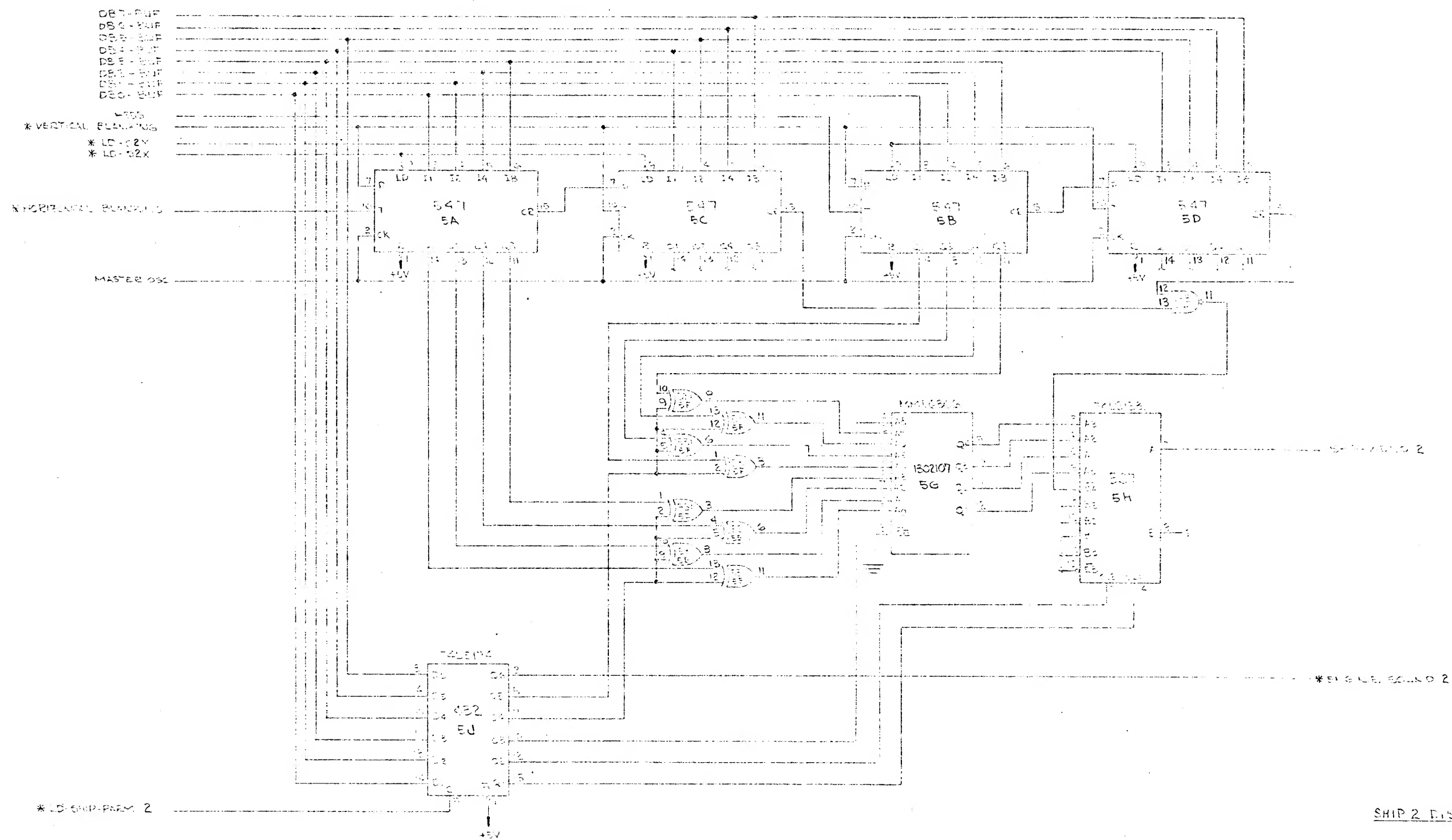


I/O DECODE LOGIC

QTY	PART NO	ITEM DESCRIPTION	ITEM NO
REQD			
LIST OF MATERIALS			
TOLERANCES			
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE TO BE HOLD TO THE CLOSEST POSSIBLE TOLERANCE. ALL DIMENSIONS ARE TO BE HOLD TO THE CLOSEST POSSIBLE TOLERANCE. ALL DIMENSIONS ARE TO BE HOLD TO THE CLOSEST POSSIBLE TOLERANCE.			
DO NOT SCALE DRAWING			
SIGNATURES			
DATE			
DRAWN			
CHKD			
ENG			
APP'D			
NEXT ASSY			
RAMTEK			
SMT LOGIC BOARD			
DATE: 5/20/88			
REV: B			



		TOLERANCES		DO NOT SCALE DRAWING		RAMTEK	
		UNLESS OTHERWISE SPECIFIED FRACTIONS ALL DIMENSIONS & ANGLES ALL SURFACES FINISH		SIGNATURES		DATE	
		MATERIAL		OWN		GEOMETRIC BODY/ROUND	
		FINISH		CHK		DATE 10/1/80	
		NEXT ASSY		ENG		SCALE	REV NO.
				APVD		1:1	350-44
							REV B

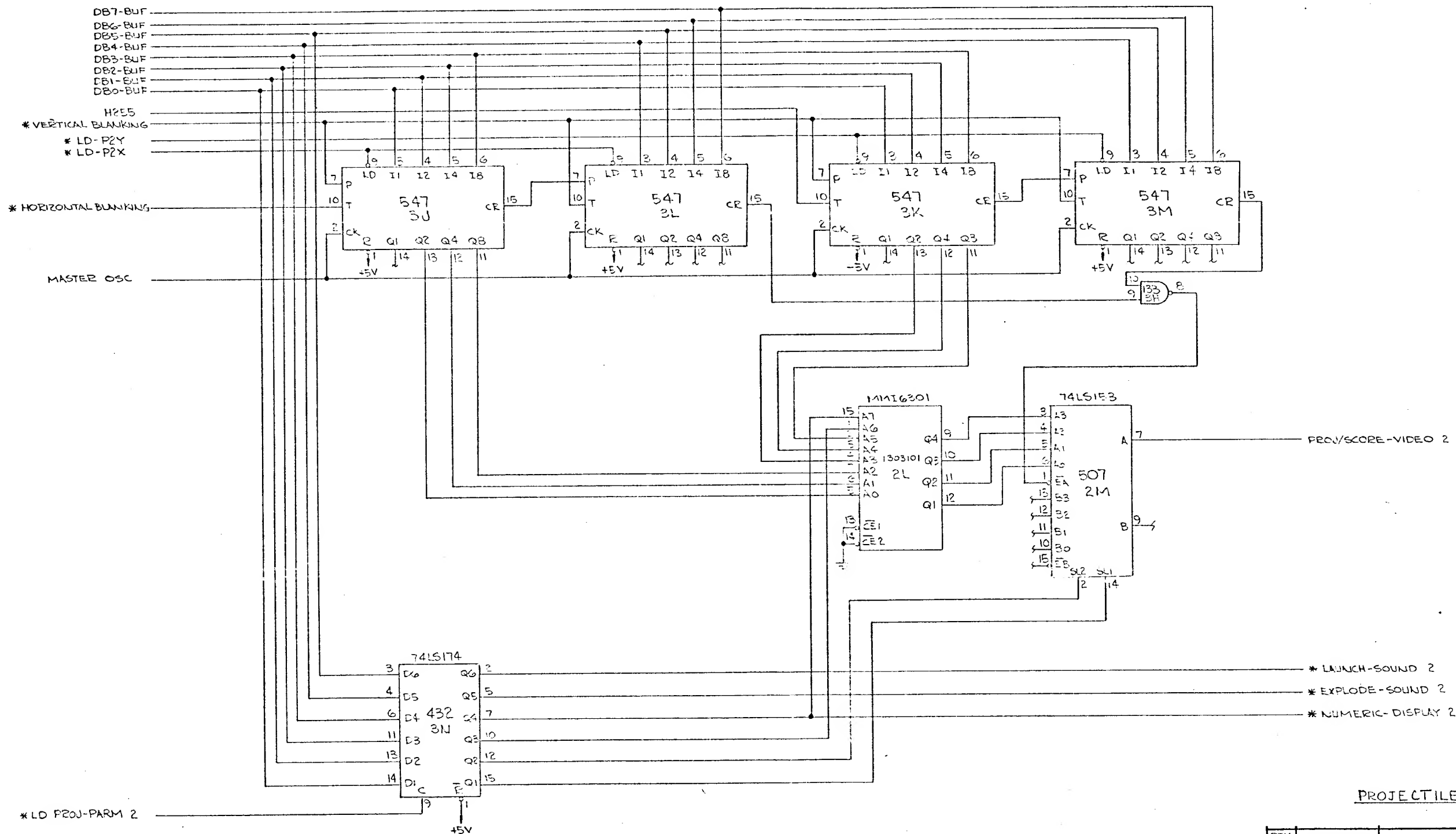


SHIP 2 DISPLAY & MOTION

NO.	DESCRIPTION	REVISION	DATE
1	SCHEMATIC LOG 1/1000		
2			
3			
4			
5			
6			
7			
8			
9			
10			

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REVISIONS			
LTN	DESCRIPTION	DATE	BY
—	SEE SHEET 1	—	—

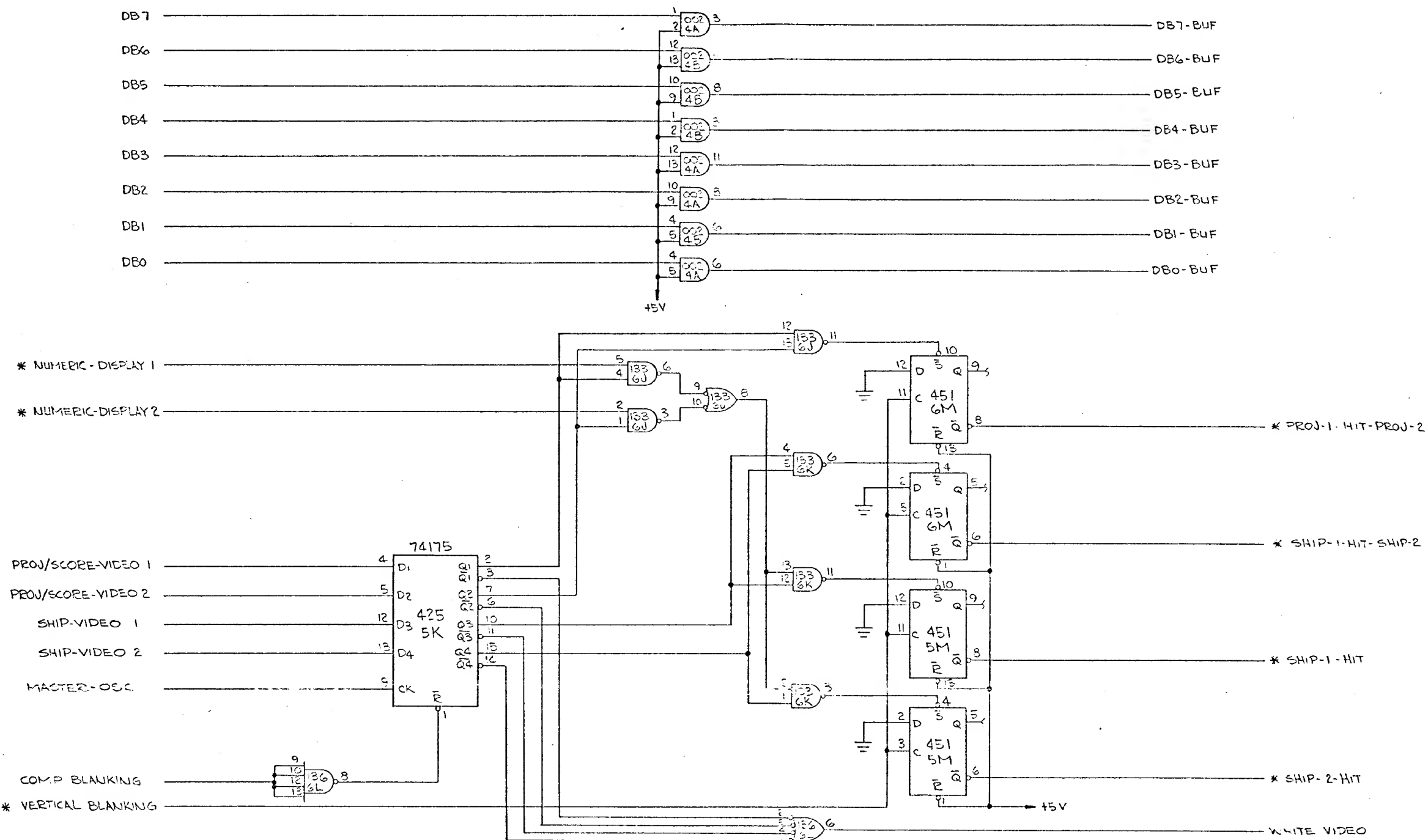


PROJECTILE & SCORE 2

QTY	PART NO.	ITEM DESCRIPTION	ITEM NO.
REQD			
LIST OF MATERIALS			
DO NOT SCALE DRAWING			
SIGNATURES		DATE	
DWN			
CHK			
ENC			
APVD			
MATERIAL		DRAWING NO.	
FINISH		REV	
NEXT ASSY		REV	

TOLERANCES			
UNLESS OTHERWISE SPECIFIED, REMOVE ALL DIMENSIONS & SPEAR ALL SHARP EDGES.			
MATL			
FINISH			
NEXT ASSY			
RAMTEK			
SCHEMATIC FOR SCORE 2			
REV B			

REVISIONS			
LTN	DESCRIPTION	APPR	DATE
1	SEE SHT 1		

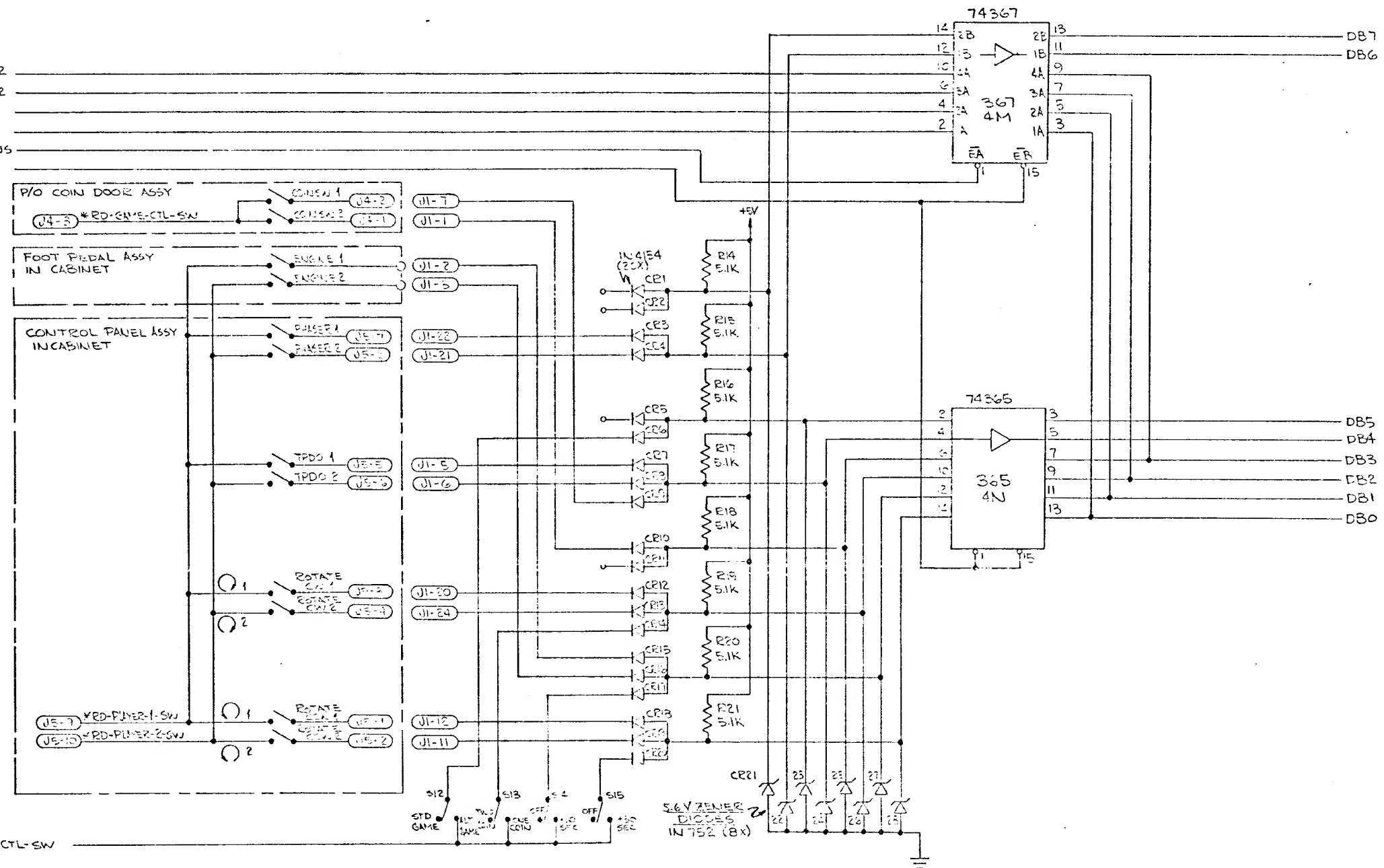


VIDEO CORRELATION LOGIC

QTY REQD	PART NO.	ITEM DESCRIPTION	ITEM NO.
LIST OF MATERIALS			
TOLERANCES		DO NOT SCALE DRAWING	
UNLESS OTHERWISE SPECIFIED, REMOVE ALL DIMENSIONS TO NEAREST 0.001 INCH.		SIGNATURES DATE	
XXX	XXX	DATE	
MATL		CHK	
FINISH		ENG	
NEXT ASSY		APPRO	
RAMTEK		550314 B	

REVISIONS			
LT#	DESCRIPTION	DATE	BY
1	SEE SET 1		

- * SHIP-1-HIT-SHIP 2
- * PROJ-1-HIT-PROJ 2
- * SHIP-1-HIT
- * SHIP-2-HIT
- * RD-GAME-STATUS
- * RD-SWITCHS



I/O READ CIRCUITS

QTY REQD	PART NO.	ITEM DESCRIPTION	ITEM NO.
LIST OF MATERIALS			

TOLERANCES		DO NOT SCALE DRAWING		SIGNATURES		DATE
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES AND DECIMALS THEREOF.				OWN		
MATERIAL				CHK		
FINISH				ENG		
NEXT ASSY				APP		

RAMTEK		5500244		REV. B
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